Skill Procedures:
Orotracheal Intubation

I. Usage

1. This protocol describes the technique for performing orotracheal intubation. Orotracheal intubation may be performed by standing orders dependent on the various protocol in use.

> **Note Well:** *Do not use endotracheal (ET) intubation as the primary method of airway control in an arrest.*

II. Indications

1. Cardiac arrest.
2. Respiratory arrest.
3. Deep coma, patient without gag reflex.
4. Severe respiratory distress with respiratory arrest imminent.

III. Contraindications

1. Combative.
2. Clenching teeth.
3. An active gag reflex.

IV. Precautions

1. Hyperventilate the patient with 100% oxygen with bag-valve-mask (B-V-M) prior to ET intubation.

2. Standard orotracheal intubation is contraindicated in patients with suspected neck injuries. Oral intubation with in line cervical spinal stabilization is the best alternative in a trauma patient requiring definitive airway control.

3. Never lever the laryngoscope against the teeth.

4. Prepare suctioning beforehand as vomiting is common.

5. Intubation attempts will be limited to 20 seconds per attempt - two attempts per paramedic; limited to a maximum of 4 attempts per patient.

Note Well: *Compared to an adult, a child's vocal cords are more anterior and superior, the tongue is larger, the mandible and oral cavity are smaller, the diameter and length of the trachea are smaller and the soft tissues are more fragile.*

V. Procedural Protocols

1. Assemble all equipment while team members hyperventilate the patient.

    A. Choose appropriate tube (see Endotracheal Tube Size table).

    B. Check balloon (if cuffed tube) for leaks with 10cc of air.

    C. Lubricate tube.

    D. Place stylet in ET tube, stopping ½-inch short of end of tube (optional).

    E. Assemble laryngoscope and check light.

    F. Connect and check suction.

2. Position patient in "sniffing" position unless cervical spinal injury is suspected. If a cervical spinal injury is suspected hold the patient's head in a neutral position to eliminate movement during intubation.

    A. Neck flexed forward.

    B. Head extended back.

    C. Back of head should be level with, or higher than, back of shoulders.

3. Give a minimum of 4 good ventilations with 100% oxygen before attempting intubation.

V. Procedural Protocols (continued)

4. Insert laryngoscope to right of midline. Move it to midline, pushing tongue to left and out of view.

> ***Note Well:*** *If an EOA or similar device is in place, remove the mask and move the EOA to left with tongue in order to introduce ET from right side of mouth.*

5. Lift straight up on blade to expose posterior pharynx.

6. Identify epiglottis: tip of curved blade should sit in vallecula (in front of epiglottis), straight blade should slip over epiglottis.

7. With gentle further traction to straighten airway, identify trachea and arytenoid cartilages and vocal cords.

8. Insert tube from right side of mouth, along blade into trachea under direct vision.

9. Advance tube so cuff is 1 to 1.5-inches beyond cords and inflate cuff with 5-10cc of air. Ventilate and watch for chest rise. Listen for breath sounds

> ***Note Well:*** *Do not inflate cuffs for sizes under 6mm (children)*

A. Over stomach - no sounds should be heard.

B. Four lung fields.

C. Axillae.

> ***Note Well:*** *Auscultation may reveal decreased breath sounds on left indicating intubation of the right mainstem bronchus. If so gently pull tube back and re-auscultate for improved breath sounds.*

V. Procedural Protocols (continued)

10. Establish that tube is properly positioned and secure tube with tape. Note number on ET tube at central incisor.

11. Reassess breath sounds.

VI. Notes

1. If tube placement is questionable, remove ET tube and ventilate with 100% oxygen and B-V-M.

2. One of the best criteria for insuring that the ET tube is placed in the trachea is to visualize it going through the cords. Once the tube is thought to be in the trachea the cuff should be immediately inflated. Further confirmation of proper placement is suggested by:

   A. Verification via end tidal CO_2 detector

   B. The absence of "gurgling" in the epigastrium.

   C. Auscultating good breath sounds in all lung quadrants.

   D. Noting good chest expansion with ventilations.

   E. Noting "frosting" in the ET tube on expiration.

   F. Improving color of patient.

   G. Improved oxygen saturation on the pulse oximeter.

3. ET tubes that are clearly not in the trachea should be deflated and immediately removed.

Note Well: *ET intubation is not the procedure of choice in the first minutes of a resuscitative effort. It is a secondary procedure only. Wait to intubate until the situation is under enough control that the procedure will be successful.*

VI. Notes (continued)

4. Difficult intubations can occasionally be made easier by continued pressure placed over the thyroid and cricoid cartilages moving the vocal cords posteriorly into view.

5. Whenever the patient is moved re-auscultate per Procedural Protocols - 9 to ensure proper tube placement is maintained.

6. Medical Control may order lidocaine (1.0mg/Kg) IV prior to intubation for patients with suspected increased intracranial pressure (i.e., closed head injury, intracranial bleed, etc.).

7. Orotracheal intubation can be accomplished in trauma victims if a team member maintains in line cervical stabilization and keeps the neck in a neutral position.

VII. CO_2 Detector Notes

1. ET tube placement that is questionable can be further confirmed by use of the End Tidal CO_2 ($ETCO_2$) detector. There are three readings of $ETCO_2$ that this device provides:

   A. Range A, $ETCO_2$ < 0.5%.

   B. Range B, $ETCO_2$ 0.5 to 2%.

   C. Range C, $ETCO_2$ > 2%.

2. If the $ETCO_2$ detector is in the B or C range, one can be fairly comfortable that the ET tube is correctly placed.

VII. CO_2 Detector Notes (continued)

3. A reading in the B or C range is a reliable confirmation of correct ET tube placement. A reading in the A range can mean several things:

   A. Improper tube placement.

   B. Poor cardiac output (i.e. poor CPR).

   C. Ventilation/perfusion mismatch (i.e. massive PE).

   D. Inadequate ventilations (obstructed airway or severe bronchospasm).

   E. A prolonged period of arrest.

4. If the detector is in the A range and the patient is not in cardiac arrest, the ET tube should be removed and the patient ventilated by other means. If the patient is in cardiac arrest, recheck all clinical indicators of correct ET tube placement. If the clinical indicators continue to suggest correct placement, use the laryngoscope to visualize the tube going through the cords. If the ET tube can be clearly viewed going through the cords, it may be left in place and CPR technique should be evaluated.

5. Contamination of the $ETCO_2$ detector with vomitus or certain drugs (i.e. lidocaine or epinephrine) can cause the membrane to turn yellow or orange/yellow.

6. All clinical findings and $ETCO_2$ (i.e. range a, b or c) readings should be recorded on the Patient Care Report.

This Page Intentionally Left Blank